



**XXIVth World
Road Congress
Mexico 2011**
Mexico City 2011.

Seminars in Czech Republic and in Mongolia

Didier Giloppé

- Cete Normandie Centre/ Setra
- Winter service expert
- didier.giloppe@developpement-durable.gouv.fr



Ministère
de l'Écologie,
de l'Énergie,
du Développement
durable
et de la Mer



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In addition to their traditional activities of production of doctrines, participation and experience sharing in the World Road Congresses, PIARC technical committees have the mission to organize seminars in transition or developing Countries.

The B5 committee on winter service, does not escape this rule and during the present cycle two Seminars, one in Czech Republic the other one in Mongolia, were organized.



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Czech Republic

This « International Seminar on the Technical Solution for Sustainable Winter Service » was held from October 7 to 9, 2009 in Hradec Králové, with the assistance of :

- World road association
- Technical committee B5
- Ministry for Transport of the Czech Republic
- Direction of Road and motorways



ŘEDITELSTVÍ
SILNIC A DÁLNIC ČR



Two hundred specialists of winter service from 25 different countries, much participants of the country and bordering countries



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Czech Republic



**International Seminar
on Technical Solution
for Sustainable Winter Service**

October 7-9 | 2009





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The sessions proceeded during two days, the morning of the third day was devoted to a technical visit

- Twenty two speakers resulting from fourteen countries
- A round table devoted to winter service and sustainable development.





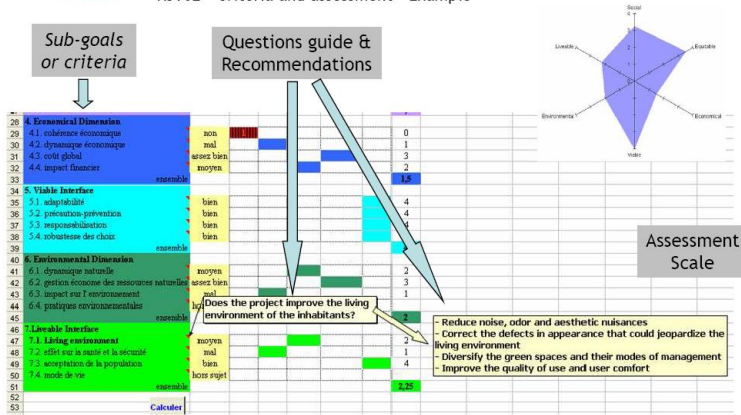
Following the traditional opening speeches made by the vice-minister, the director of the roads, the mayor of the city and the chair of the committee, and with quite as traditional presentation of the activities of B5 committee, a particularly rich program was proposed.

Winter service and sustainable development one of the topics of reflexion of the B5 committee



Project Evaluation Tool - Criteria & assessment

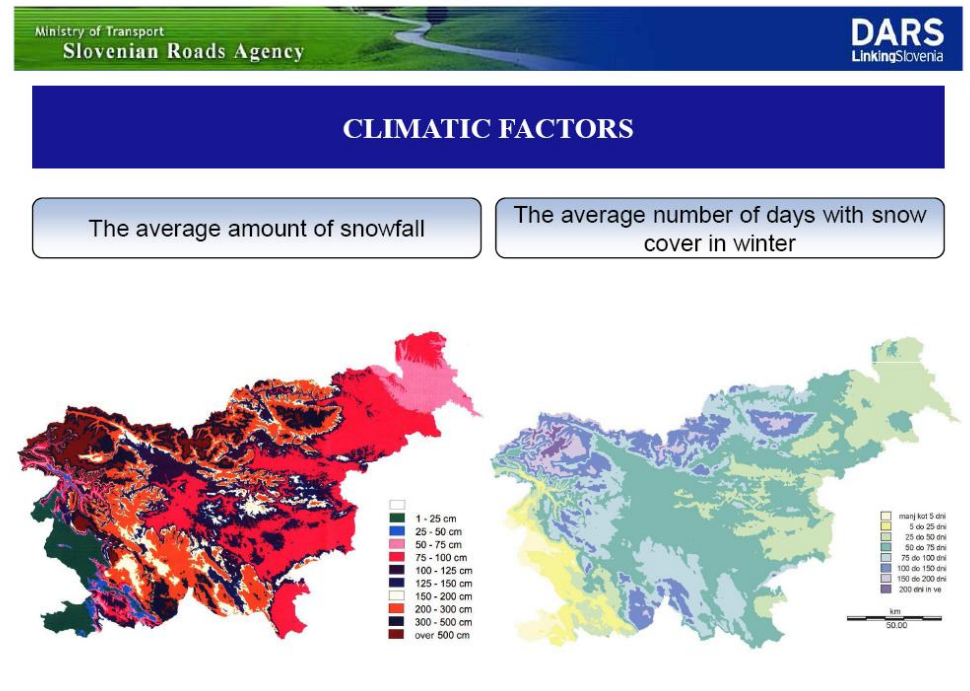
RST02 - Criteria and assessment - Example





- Experiences of Winter service from different countries (Czech Republic, Latvia, Slovaquia, Sweden, Italie Canada, Autria, Germany)

The climate in Slovénia





- Technology, materials and mechanization in Winter maintenance (Belgium, Czech Republic, Latvia, Hungary, Norway)

Brine manufacturing unit
in Wallonia region

BRINE & DE-ICING SALT STORAGE FACILITIES

Brine tank facilities



(2 X 35.000 L)

Salt barns

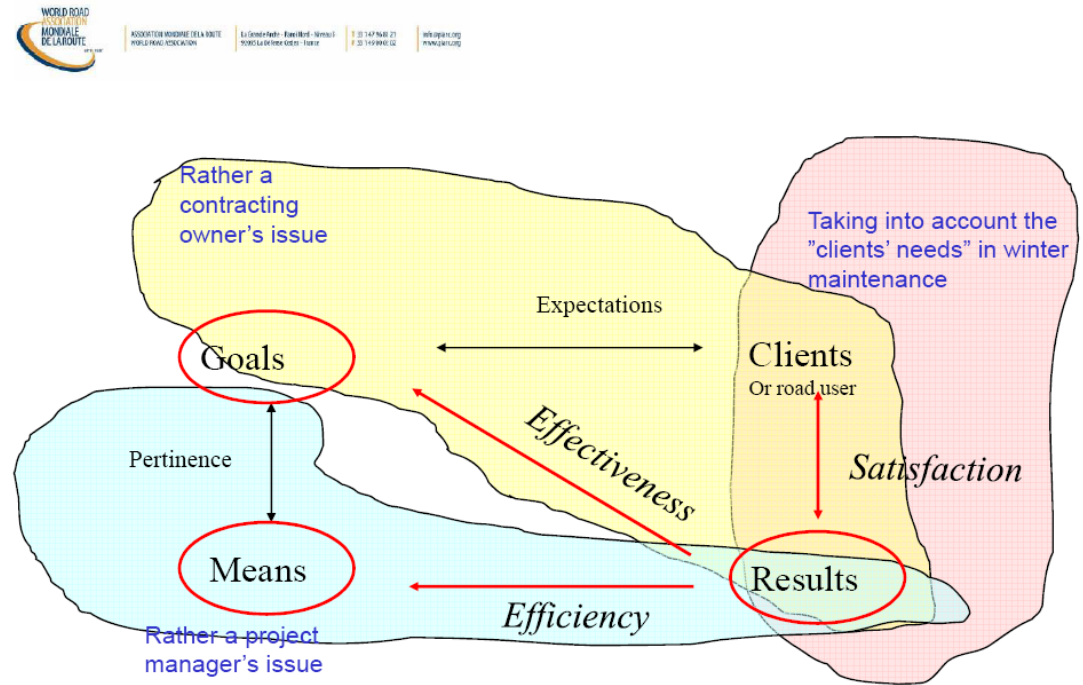


+/- 150 tons/barn
Storage capacities/district:
between 1500-1800 tons



- Research and new technical Solutions in Winter maintenance (Czech Republic, Norway, Sweden, Finland, USA, France)

Indicators a significant concept to appreciate performances



.....Frontiers are always moving and changing



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A round table allowed to give a first image on approaches of the various countries in term of sustainable development





In spite of the continuous technological developments the man remains in the center of the device in term of decision making and well responsibility

It is increasingly necessary to make the road user a partner of winter service , by developing road information, but also by integrating it in a process of expression of the needs and appreciation of the service quality.





The management of deicing materials (salt) during all their cycle of life for winter maintenance use remains a fundamental question.

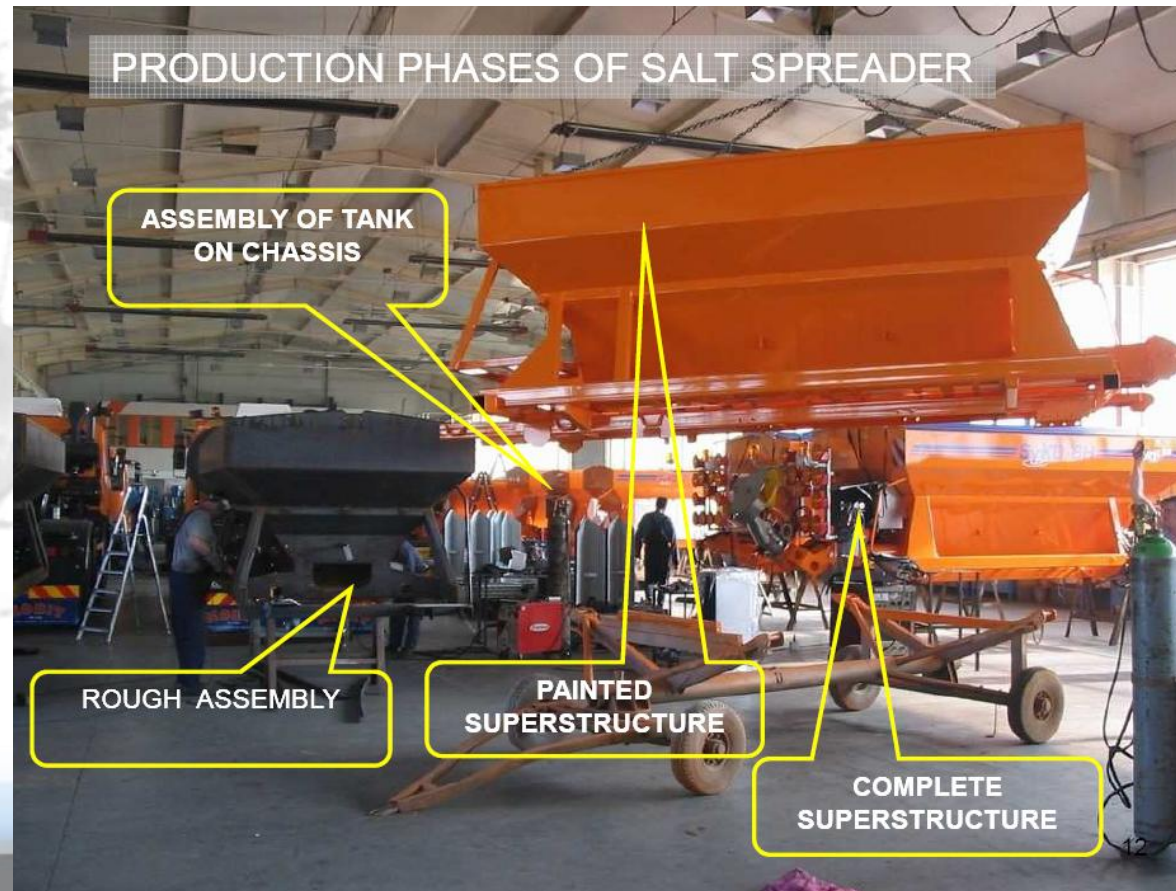
The answers is in work on the optimization of the provisioning, the quality of the products (standardization), storage (guide, environmental analysis) and spreading .

Storage !!!





Visit of a fabric of winter service equipment.





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Mongolie

This second seminar entitled "Management of winter service in an extreme continental climate country " was organized

from April 6 to 8, 2011 in Oulan Bator with the assistance of :

- World road association
- Technical committee B5
- Ministry of road, transport, building and urban development

The banner features a blue header with logos for the Ministry of Road, Transport, Building and Urban Development, the World Road Association (PIARC), and the Government Implementing Agency of Mongolia, Department of Roads. Below the header is a photograph of a snowy road winding through a landscape. The text 'INTERNATIONAL SEMINAR' is centered above the quote 'Management of Winter service in an extreme continental climate country'. At the bottom, the dates 'April 6-8, 2011' and location 'Ulaanbaatar city, Mongolia' are displayed.

MINISTRY OF ROAD, TRANSPORT, BUILDING AND URBAN DEVELOPMENT

WORLD ROAD ASSOCIATION (PIARC)

PIARC - B5 WINTER SERVICE TECHNICAL COMMITTEE

GOVERNMENT IMPLEMENTING AGENCY OF MONGOLIA, DEPARTMENT OF ROADS

INTERNATIONAL SEMINAR

“Management of Winter service in an extreme continental climate country”

April 6-8, 2011
Ulaanbaatar city, Mongolia



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The seminar proceeded over two days and brought together 82 participants of 11 different countries, 23 communications were presented

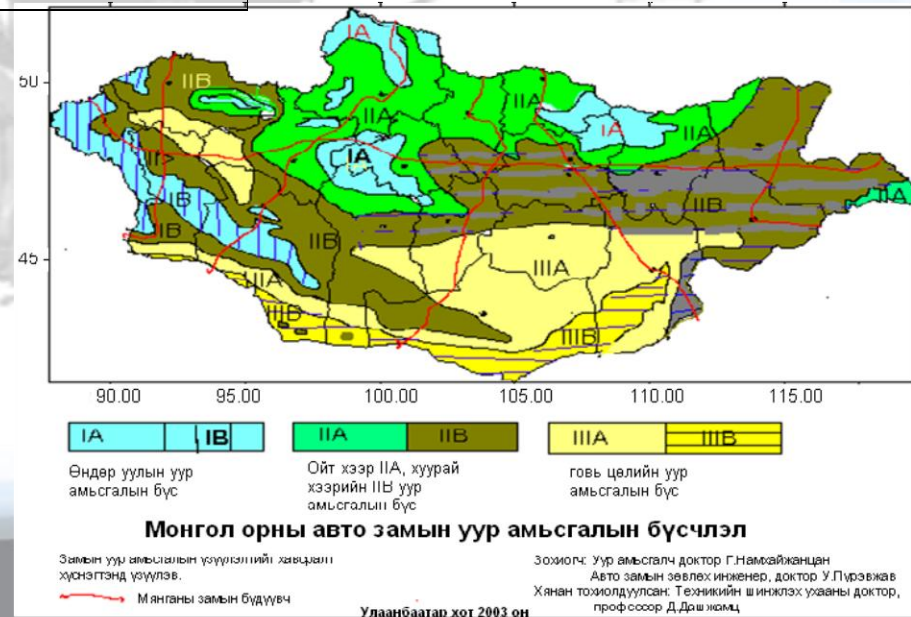




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| Zone | I | II | III |
|---------------------|------------------|-----------|----------------|
| Winter Duration | 200 days | 185 days | 165 days |
| Thickness of snow | 35 cm | 30 cm | 18 cm |
| Average temperature | - 35 | - 28,5 | -18,5 |
| Depth of freezing | 2,8 à 3,8 mètres | 1,5 à 3 m | Moins de 1,5 m |

Records !
– 57 °C
A yearly amplitude of 87 °C





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- The opening ceremony including a welcome address by the ministry of Roads, transportation, construction and urban development





Exchanges the local winter maintenance expérience (Estonia , Mongolia, Russia, China, Slovaquia, Norway, Poland. Japan. France)

Reasons for difficult driving conditions

- **Redused visiability**
 - Drifting snow/snowing
 - Fog/mist
 - Condens/ice in tunnels
 - Storage of snow at roadintersectios
- **Poor friction/difficult roadlane**
 - Snow/ice covered lane
 - Water in lane
- **Closing road**
 - Avalanch and rock fall
 - Flooding
- **Generally difficult driving conditions**
 - Wind
 - Undercooled rain



Level of service in Inner Mongolia

Criteria and Quality Requirements Time for fully exposing black-top surface of lanes

- For slight snow: within 24 hrs
- For medium snow : within 36hrs
- For heavy snow : within 48hrs
- For blizzard: determined as the specific conditions





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Technology, materials and mechanization in the winter maintenance and particular measures for difficult climates (Japan, Norway, China, Mongolia)

Two extremes approach for the same country



2. Present Status

www.harbin.com.cn



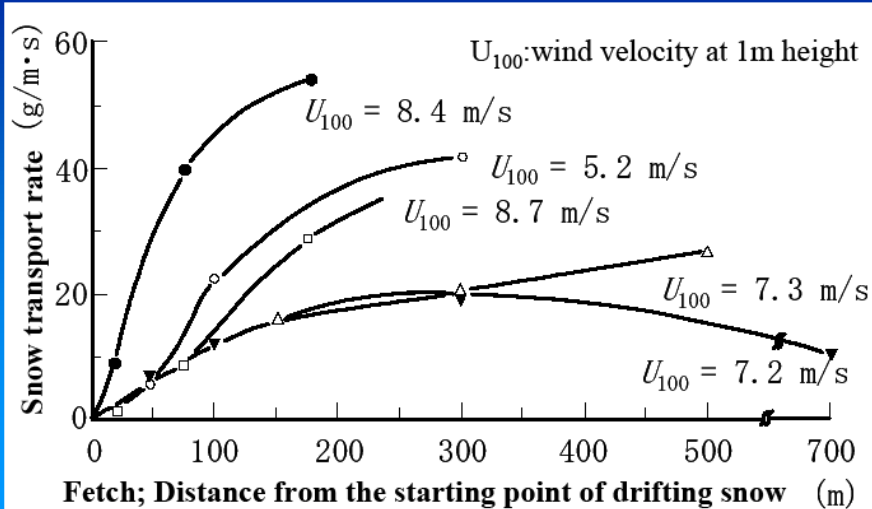
CBX-216 city road ice snow machine by Harbin Institute of Forestry Machinery, CBX-1600 type of snow removal machines by the Institute of Jilin Transportation Science.



Organization research and new technology solution in the winter maintenance

Theoretical research on transport of snow by the wind, but also practical measurements very effective

Horizontal distribution of snow transport rate





Round table

The very fruitfull discussion was based mainly on frost protection of road



6

Research of replacement method

$$D_r = 0.8 \times D_f$$

- The top 80% of the frost depth (D_f) is responsible for most of the frost heaving.
- D_r : Replacement depth
- d : depth
- D_f : Frost depth
- f_d : Frost heave displacement at depth of d
- F : Frost heave displacement at ground level

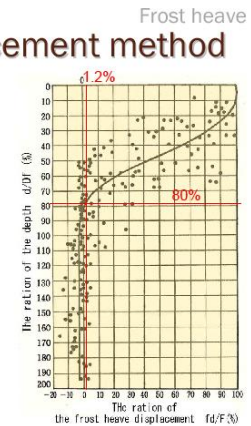


Figure 4. Depth and effect of frost heave (observed by open cut of conventional gravel road) (After IFUKUBE)





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Thank you very much for your attention

